

***What Is Claimed Is:***

1. A method of managing the saturation level of a vapor collection canister for an on-board fuel vapor emission control system, comprising:

flowing the fuel vapor through a canister flow path between a first port and a second port of the vapor collection canister; and

signaling with a sensor the temperature of an adsorbent disposed in the canister flow path, the sensor being exposed to the adsorbent.

2. The method of claim 1, wherein the signaling with a sensor comprises signaling the temperatures of a plurality of portions of the adsorbent with a plurality of sensors disposed in the respective plurality of portions of the adsorbent.

3. The method of claim 2, further comprising locating an adsorption front of the adsorbent based on the temperature signals.

4. The method of claim 3, further comprising purging an adsorbate from the adsorbent when the adsorption front advances to one of the plurality of portions of the adsorbent.

5. The method of claim 4, wherein the purging comprises:

receiving the temperature signals with an electronic control unit; and

sending an actuating control signal from the electronic control unit to a solenoid actuated valve disposed in a first conduit, the first conduit providing a purge flow path between the first port and an intake manifold of an internal combustion engine.

6. The method of claim 5, wherein the purging comprises:

flowing atmospheric air through a second conduit, the second conduit providing an atmospheric flow path to the second port;

flowing the atmospheric air through the second port;

flowing the atmospheric air through the canister flow path; and

flowing the atmospheric air through the first conduit.

7. The method of claim 6, further comprising managing the pressure of the canister purge valve with a pressure management valve disposed in the second conduit.

8. The method of claim 7, wherein the receiving the temperature signals with the electronic control unit comprises:

receiving the temperature signals with a printed circuit board, the printed circuit board being disposed in the pressure management valve; and  
sending the temperature signals to the electronic control unit.

9. A method of managing fuel vapor in an on-board fuel vapor emission control system, the vapor emission control system including a fuel tank headspace, a vapor collection canister, a canister purge valve, a pressure management valve, an electronic control unit, a first conduit providing fluid communication between the fuel tank headspace, the vapor collection canister, and an intake manifold of an internal combustion engine, and a second conduit providing fluid communication between the vapor collection canister and ambient atmosphere, the canister purge valve being disposed in the first conduit, the pressure management valve being disposed in the second conduit, the method comprising:

flowing the fuel vapor through a canister flow path between a first port and a second port of the vapor collection canister; and

signaling with a sensor the temperature of an adsorbent disposed in the canister flow path, the sensor being exposed to the adsorbent.

10. The method of claim 9, wherein the signaling with a sensor comprises signaling the temperatures of a plurality of portions of the adsorbent with a plurality of sensors disposed in the respective plurality of portions of the adsorbent.

11. The method of claim 10, further comprising locating an adsorption front of the adsorbent based on the temperature signals.

12. The method of claim 11, further comprising purging an adsorbate from the adsorbent when the adsorption front advances to one of the plurality of portions of the adsorbent.
13. The method of claim 12, wherein the purging comprises:
  - receiving the temperature signals with the electronic control unit; and
  - sending an actuating control signal from the electronic control unit to the canister purge valve.
14. The method of claim 13, wherein the purging comprises:
  - flowing atmospheric air through the second conduit;
  - flowing the atmospheric air through the second port;
  - flowing the atmospheric air through the canister flow path; and
  - flowing the atmospheric air through the first conduit.
15. The method of claim 14, further comprising managing the pressure of the canister purge valve with the pressure management valve.
16. The method of claim 15, wherein the receiving the temperature signals with the electronic control unit comprises:
  - receiving the temperature signals with a printed circuit board, the printed circuit board being disposed in the pressure management valve; and
  - sending the temperature signals to the electronic control unit.